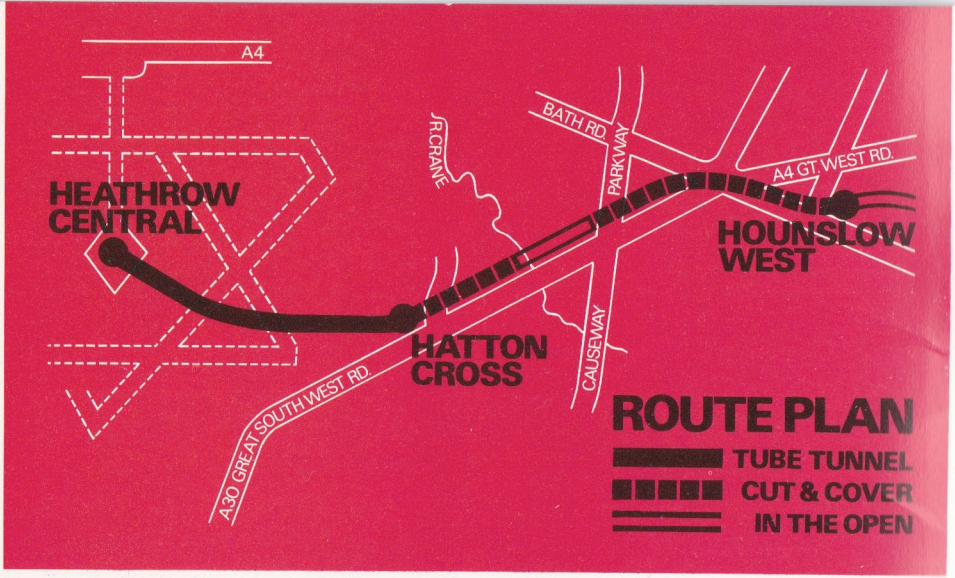
Piccadilly Line

EXTENSION TO HEATHROW AIRPORT

a progress report

THE HEATHROW EXTENSION



Heathrow, one of the world's major international airports, is being linked with the heart of London by Underground. This 'plugging in' of the airport to the London Underground system is being achieved by extending the Piccadilly Line 3½ miles from its old terminus at Hounslow West to an Underground station in the centre of the airport. The airport station will be named Heathrow Central and already there is an intermediate station at Hatton Cross on the Great South West Road (A30) which runs along the south perimeter of the airport. Hatton Cross serves Heathrow's busy engineering and maintenance areas.

The extension opens in two parts: the Hatton Cross section is already in use and it is hoped to open to Heathrow Central (where complicated engineering works are involved) in 1977.

From Hounslow West to Hatton Cross (just under two miles) the new line runs in 'cut-and-cover' tunnels, except for about 600 yards where the tracks surface to cross the River Crane alongside the A30. From Hatton Cross the line runs into deep twin tube tunnels for 1¼ miles under the airport runways to the new station, which will be linked with the main terminal buildings by moving walkways.

In 'cut-and-cover' construction, a deep trench is excavated for the railway and afterwards roofed over, leaving the line in a covered way, the roof of which can form a road or be used for other purposes. Much of the extension line runs beside the Bath Road and the Great South West Road and has been carefully returfed to eliminate 'scars'. (See also Tunnelling Methods).

To serve the airport, the Piccadilly Line will have new trains, each with more space around the doors for luggage. A special symbol for the air connection will be used on the Piccadilly Line and its trains to call attention to the direct link with the airport. The symbol, the internationally recognized aircraft silhouette (opposite), will be incorporated in the 'Heathrow' destination blind on the front of trains, and in the 'Heathrow' destination platform indicators throughout the line. The symbol is already being used on Underground maps at stations and in trains.

THE NEW LINE IN ACTION

Trains will run to and from the airport every 4 minutes in peak hours, but with a less frequent service at other times—the maximum interval between trains will be 7½ minutes and the journey time from the airport to Hyde Park Corner will be about 35 minutes.

The Piccadilly Line, which runs through the heart of London's West End, also serves many hotel areas such as Kensington, Gloucester Road, Earl's Court, Russell Square and Bloomsbury. Of 132,000 hotel beds in London, nearly 88,000 are within ½ mile of a Piccadilly Line station, and still more hotel development is going on in areas served by the line.

The new link with the airport is primarily for the 'briefcase' air traveller, or those carrying their own luggage. It will also mean much improved travelling for over 50,000 workers at the airport, for friends seeing off or meeting flights, and for sightseers.

THE NEW STATIONS

HOUNSLOW WEST

At platform level a completely new station has been built adjacent to the existing station. It is of the island platform type with a twin staircase to and from ground level. The original ticket hall is connected to the new platforms by a covered walkway. The new station includes a high degree of sound insulation and its design allows for possible future development of the station area. The old platform area has been filled in to allow the car park to be enlarged from 100 to 150 and, eventually, to 250 spaces.

HATTON CROSS

The new station, with its 'Speedbird' motif, has forced ventilation and sound proofing to reduce aircraft noise for passengers and staff. Its island platform connects by a twin staircase with a single-storey ticket hall at surface level, provided with automatic doors. The station has an adjacent Bus Station, and is of great use to airport workers. Cars may stop to pick up and set down Underground passengers. There is no car park but it is hoped to provide some car parking nearby for commuter traffic.

The new platforms at Hounslow West Station. ▲
The first train in passenger service arrives at Hatton Cross Station – 19 July 1975. ▶

HATTON CROSS

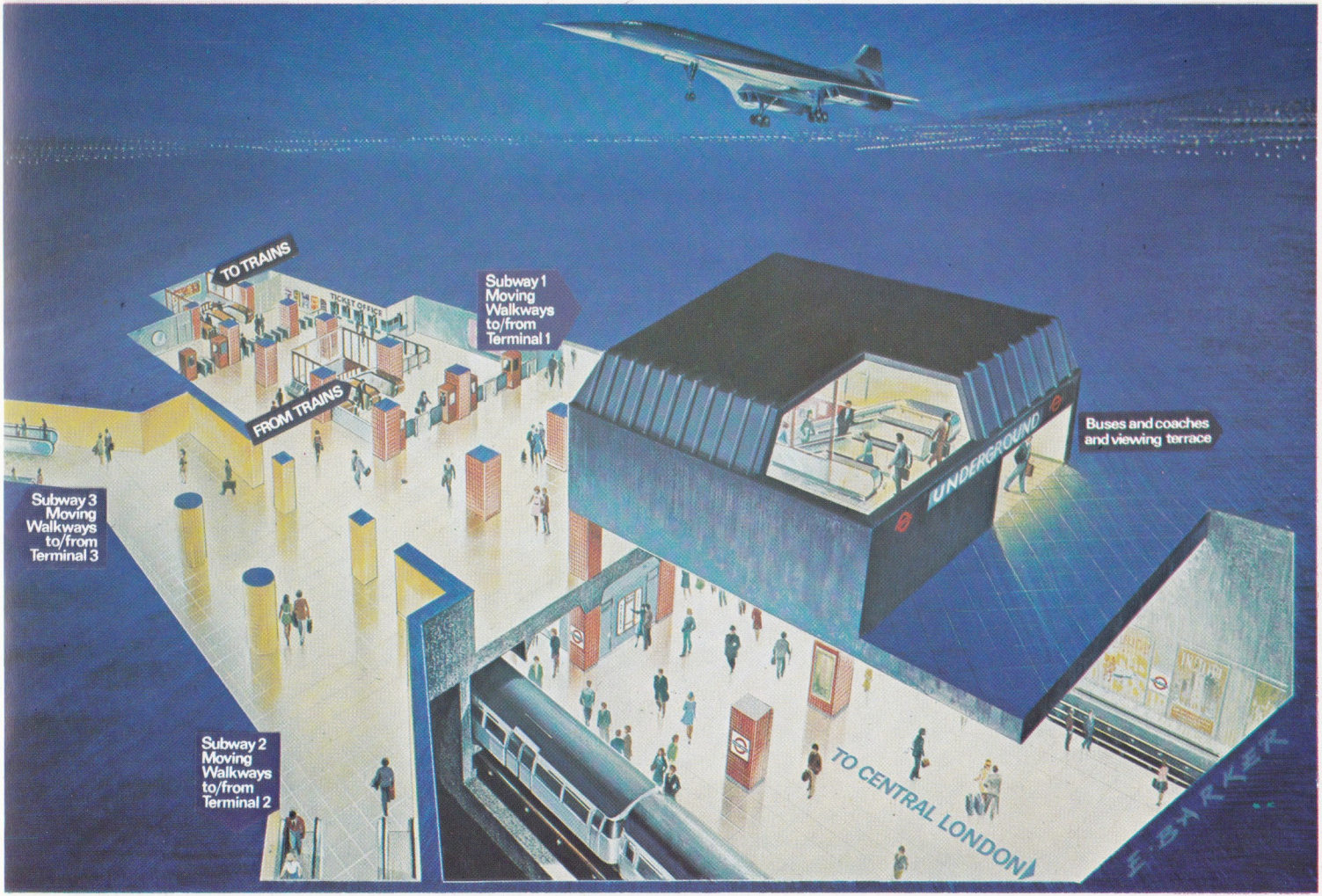
HEATHROW CENTRAL

This station will be contained in a vast reinforced concrete box some 400 ft long, 80 ft wide and 50 ft deep. It will have three levels. At the bottom will be the platforms, in the middle an intermediate floor with accommodation and offices for station and other staff, and at the top will be the large ticket hall, 20 ft below the surface. Two pairs of escalators will link the platforms with the ticket hall and in-going and out-going passenger flows will be kept separate to avoid congestion underground. Moving walkways, being provided by the British Airport Authority, will link the ticket hall with the terminal buildings. The ticket hall will contain a Travel Enquiry Office where other travel organizations may also be represented.

The construction of the station, taking place as it does completely within the confines of the box, is a complex engineering project. After building the walls of the box, the inside was then excavated and the sides supported by struts.

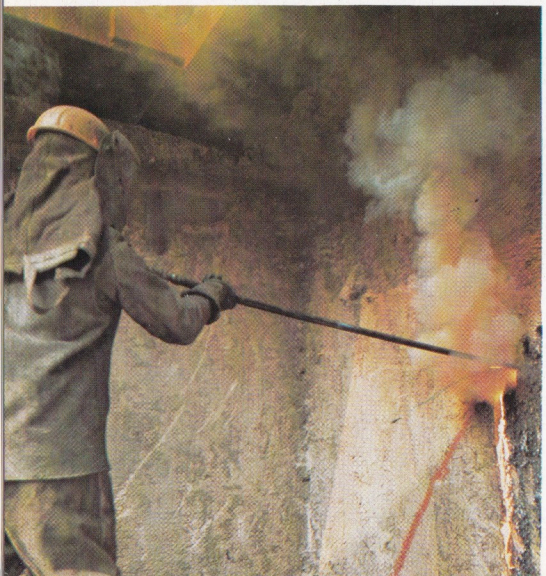
Construction of Heathrow Central Station. ▲

Artist's impression of Heathrow Central, showing moving walkways. ▶


TO TRAINS
TICKET OFFICE
FROM TRAINS
Subway 1
Moving
Walkways
to/from
Terminal 1
Subway 3
Moving
Walkways
to/from
Terminal 3
Subway 2
Moving
Walkways
to/from
Terminal 2
UNDERGROUND
Buses and coaches
and viewing terrace
TO CENTRAL LONDON
E. BARKER

TUNNELLING METHODS

The first part of the extension from Hounslow West runs through residential areas and great care was taken to keep any inconvenience to local residents to an absolute minimum as well as restoring, as quickly as possible, the surface disturbed during construction. First the walls of the tunnel, formed with special piles, were placed in position so that the earth and gravel between the walls could be cleared to a depth sufficiently low to allow the tunnel roof to be laid. The surface greensward was then replaced while the rest of the earth was removed below the roof of the new tunnel. Special 'pit-heads' along the line of route allowed the material to be taken out. Where the line runs near residential areas between Hounslow West Station and Parkway, special rubber track supports have been fitted to reduce vibration from



◀ Breaking concrete with thermic lance

Construction work: 'Cut and Cover' opening in Gt. South West Road. ▲

Tunnel digging equipment in tube section near Heathrow. ▶

the passage of trains.

The new line breaks surface beyond Parkway to cross the tiny river Crane, which runs here in a rather deep cutting, before the tracks once again disappear below ground.

Beneath the airport itself the line runs in twin tube tunnels at a depth of between 22 ft and 45 ft. These were cut by Greathead-type tunnel shields—machines which consist of a supporting structure the shape of the tunnel, under which the soil can be excavated. The shield is driven forward by hydraulic jacks bearing on the already completed section of the tunnel. The steel lining of the newly excavated section is then placed in position by special machinery behind the shield. The waste material is taken back through the completed tunnel on moving belts. Laser beams were used to guide the shields as they cut the tunnels to ensure perfect alignment.

THE TRAINS

In November 1971 an order was placed with Metro-Cammell Ltd of Birmingham for the bodies and bogies of 88 new trains for the Piccadilly Line, in readiness for the extension to Heathrow Airport. Contracts for the train motors and equipment have been placed with a number of British manufacturers. The trains will have six cars instead of the seven of existing Piccadilly Line trains, but each car will be longer (58 ft instead of 52 ft). The whole train, however, will have the same capacity as a seven-car train. The front of the trains will be painted red below the cab windows and the trains will include a number of new features, including more space around the doors for luggage, a new interior colour scheme and an improved system of ventilation. They will also incorporate 'tell-tale' train equipment panels and 'load-weighing', a system which enables the braking and acceleration of an individual car to be adjusted to suit the load carried and improve operating efficiency.

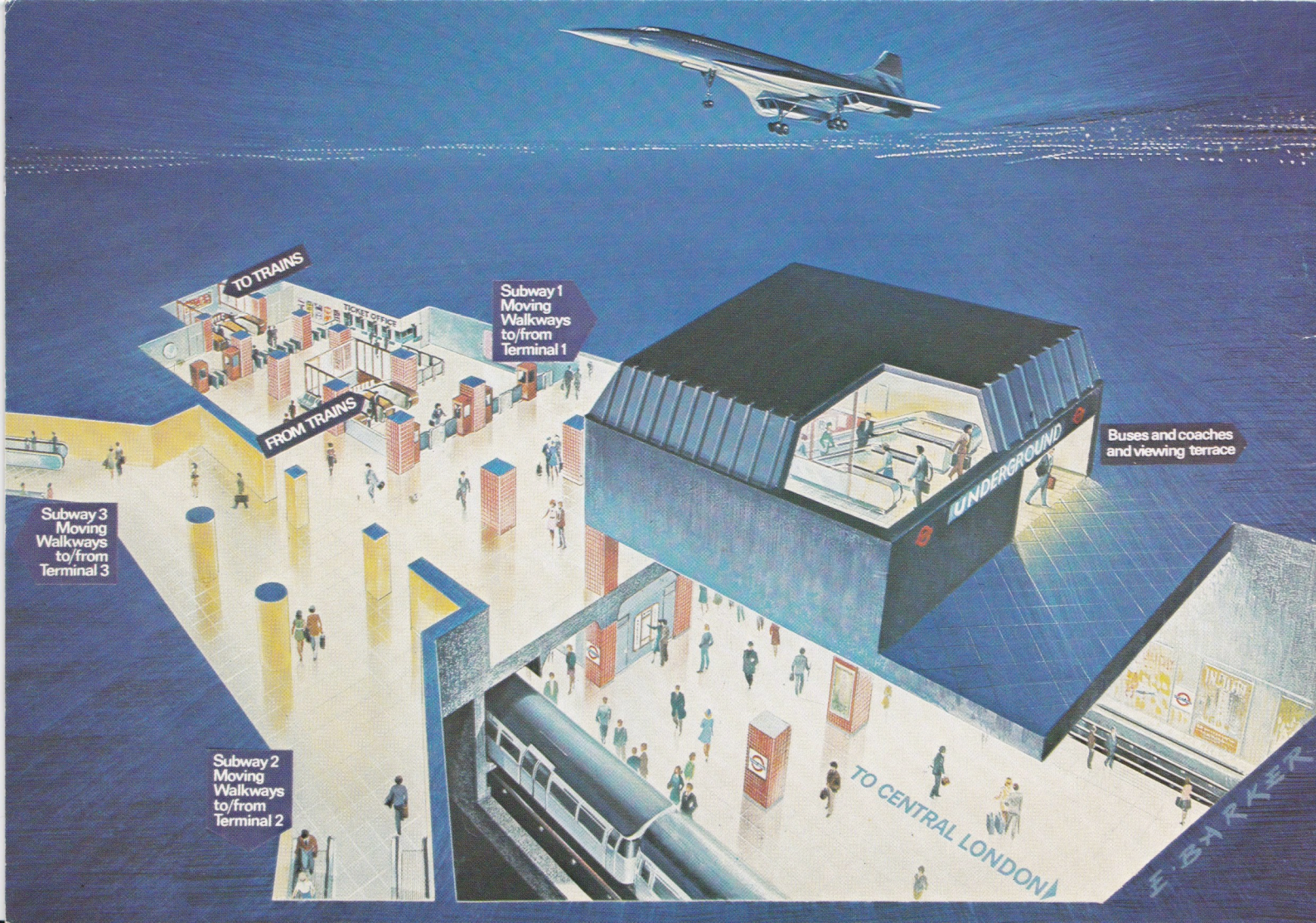
▲ The new 'Heathrow' trains.

PAYING FOR THE EXTENSION

The estimated cost of building and equipping the Piccadilly Line extension to Heathrow is, at 1974 prices, £28 million. London Transport is bearing half this cost and the Government and the Greater London Council are each contributing 25 per cent.

All details in this booklet are subject to alteration without notice.

Printed in Great Britain for the Publicity Office, London, by Staples Printers Ltd. Kettering. (1976). 775/099RP/M


TO TRAINS
TICKET OFFICE
FROM TRAINS
Subway 1 Moving Walkways to/from Terminal 1
Buses and coaches and viewing terrace
UNDERGROUND
Subway 3 Moving Walkways to/from Terminal 3
Subway 2 Moving Walkways to/from Terminal 2
TO CENTRAL LONDON
E. BARKER